FEDERAL PUBLIC SERVICE COMMISSION
COMPETITIVE EXAMINATION FOR
RECRUITMENT TO POSTS IN BPS-17 UNDER
THE FEDERAL GOVERNMENT, 2009

BOTANY, PAPER-I

S.No.	
R.No.	

TIME ALLOWED:	**(PART-I) 30 MINUTES**	**MAXIMUM MARKS:20**
	(PART-II) 2 HOURS & 30 MINUTES	**MAXIMUM MARKS:80**

NOTE: (i) **First** attempt **PART-I (MCQ)** on separate **Answer Sheet** which shall be taken back after **30 minutes.**
(ii) Overwriting/cutting of the options/answers will not be given credit.

PART – I (MCQ)
(COMPULSORY)

Q.1. Select the best option/answer and fill in the appropriate box on the Answer Sheet. (20)

(i) The spores in bryophytic plant represent the first cell of the:
(a) Gametophytic generation (b) Sporophytic generation (c) Asexual generation
(d) All of these (e) None of these

(ii) Algal members of classes Euglenophyceae and chlorophyceae are similar in the:
(a) Cell wall structure (b) Reserve food (c) Pigment composition
(d) Structure of flagella (e) None of these

(iii) Crystocarp is a structure developed after fertilization in:
(a) Blue green algae (b) Actinomycetes (c) Bryophetes
(d) Red algae (e) None of these

(iv) Rice belongs to family:
(a) Malvaceae (b) Fabiaceae (c) Solonaceae
(d) Poaceae (e) None of these

(v) Gametophyte of fern is called:
(a) Prothallus (b) Protocorm (c) Thallus
(d) Gametangia (e) None of these

(vi) The sieve elements are major component of:
(a) Cambium (b) Apical meristem (c) Xylem
(d) Phloem (e) None of these

(vii) Which one of these is a parasite:
(a) Sunflower (b) Begonia (c) Biden
(d) Brasica (e) None of these

(viii) Sporophytic generation is borne upon gametophyte and is dependent on it. This feature is present in:
(a) Cycas (b) Adiantam (c) Equisetum
(d) All of these (e) None of these

(ix) Double fertilization is a typical characteristic of:
(a) Algae (b) Fungi (c) Bryophytes
(d) Angiosperm (e) All of these

(x) Marchantia reproduces vegetatively by:
(a) Apospory (b) Gemma Cup (c) Budding
(d) All of these (e) None of these

(xi) Plant cell wall is composed of:
(a) Cellulose (b) Polypeptides (c) Phospholipids
(d) Starch (e) None of these

(xii) Stele in which primary vascular tissues are arranged in discrete strands around a pit is called:
(a) Prostele (b) Radial stele (c) Centric stele
(d) Eustele (e) None of these

(xiii) In which the following edible part is obtained from the Rhizome:
(a) Potato (b) Ginger (c) Sugar beet
(d) Onion (e) None of these

(xiv) Fertilization within an unopened flower is called:
(a) Cleistogramy (b) Cleistocary (c) Isogamy
(d) Oogamy (e) None of these

(xv) Meiosis takes place during:
(a) Gamete formation (b) Zygote formation (c) Cambium formation
(d) All of these (e) None of these

(xvi) Edible fungus is:
(a) Penicillium (b) Agaricus (c) Aspergillus
(d) Phythium (e) None of these

(xvii) Speciation is:
(a) Origin of species (b) Evolution of species (c) Identification of species
(d) Preservation of species (e) None of these

(xviii) Collective name given to sporangia in fern is:
(a) Sorus (b) Sporangium (c) Spathe
(d) Sporangiophore (e) None of these

(xix) Small, spherical protein bodies surrounded by starch deposits in chloroplasts of many algae are:
(a) Lecoplasts (b) Ribosomes (c) Microsomes
(d) Pyenidium (e) None of these

(xx) Heterocysts are present in:
(a) Volvox (b) Clostridium (c) Cycas
(d) E-Coli (e) None of these

PART – II

NOTE:	**(i)** **PART-II** is to be attempted on the separate **Answer Book.** **(ii)** Attempt **ONLY FOUR** questions from **PART-II**. All questions carry **EQUAL** marks. **(iii)** Extra attempt of any question or any part of the attempted question will not be considered.

Q.2. (a) Describe the life history of any multicellular green alga. **(10)**
(b) Write note on different parameters which are used in classification of algae. **(10)**

Q.3. (a) Describe the general characteristics and methods of reproduction in fungi. **(10)**
(b) Discuss five plant diseases of economic importance caused by fungi. **(10)**

Q.4. Explain in detail the evolution of gametophyte and sporophyte in bryophytes? **(20)**

Q.5. What is pollination and fertilization? Give an account of post fertilization events leading to the development of seeds in angiosperms. **(20)**

Q.6. What do you understand by secondary growth? Describe the process in detail in a typical Dicot. Stem. **(20)**

Q.7. Explain the different systems of classification in angiosperms. Also discuss the modern trends in plant taxonomy. **(20)**

Q.8. Enlist the salient features of gymnosperms. Also describe the features in which this group resembles and differs with pteridophytes: **(20)**

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BOTANY, PAPER-II

S.No.	
R.No.	

TIME ALLOWED:	**(PART-I) 30 MINUTES**	**MAXIMUM MARKS:20**
	(PART-II) 2 HOURS & 30 MINUTES	**MAXIMUM MARKS:80**

NOTE: (i) **First** attempt **PART-I (MCQ)** on separate **Answer Sheet** which shall be taken back after **30 minutes.**
(ii) **Overwriting/cutting of the options/answers will not be given credit.**

PART – I (MCQ)
(COMPULSORY)

Q.1. Select the best option/answer and fill in the appropriate box on the Answer Sheet. (20)

(i) Enzyme Fumarase convert fumaric acid into:
(a) Citric acid (b) Isocitric acid (c) lactic acid
(d) Glutamic acid (e) None of these

(ii) Plants growing under saline conditions are:
(a) Holophytes (b) Mesophytes (c) Hygrophytes
(d) Halophytes (e) None of these

(iii) The first product of CO_2 fixation in C_3 plants is:
(a) Phosphoglyceric acid (b) Glycolic acid (c) Citric acid
(d) Glutamic acid (e) None of these

(iv) Mutations are most likely to be caused by:
(a) 1AA (b) CO_2 (c) Dextrose
(d) Glycine (e) None of these

(v) Most of the water absorption in plants takes place through:
(a) Root caps (b) Root hairs (c) Stomata
(d) All of these (e) None of these

(vi) Oxygen produced during photosynthesis comes from:
(a) CO_2 (b) Carboxylic acid (c) Glucose
(d) Protein (e) None of these

(vii) Chloroplasts in bundle sheath cells of C_4 plants do not contain:
(a) Grana (b) Stroma (c) Thylakoids
(d) All of these (e) None of these

(viii) A group of major biotic communities occupying a climatic region of earth is called:
(a) Biome (b) Biosphere (c) Biotype
(d) Phenotype (e) None of these

(ix) In which group of plants stomata open during night:
(a) C_3 plants (b) C_4 plants (c) Halophytes
(d) CAM plants (e) None of these

(x) The occurrence of vegetation in layers is known as:
(a) Scarification (b) Stratification (c) Physiognomy
(d) Pattern (e) None of these

(xi) A plasmid is a:
(a) DNA (b) RAN (c) Protein
(d) Microsome (e) None of these

(xii) The total Genetic material within a cell is:
(a) Gene bank (b) Genetic load (c) Genome
(d) Genetic Marker (e) None of these

(xiii) Ribsomal RNA helps in:
(a) Replication (b) Transcription (c) Translation
(d) Translocation (e) None of these

(xiv) Which one of the following ions plays most important role in stomatal movement?
(a) K^+ (b) Ca^{++} (c) Cl^-
(d) Na^+ (e) None of these

BOTANY, PAPER-II

(xv) Dormancy in seeds may be due to:
(a) Hard seed coat (b) Chemical Inhibitors (c) Immature embryo
(d) All of these (e) None of these

(xvi) How many ATP molecules are produced when one hexose sugar molecule is converted into two molecules of pyruvic acid during glycolysis?
(a) 15 (b) 26 (c) 28
(d) 36 (e) None of these

(xvii) Open sea constituting about 90% of total ocean surface is called:
(a) Pelgaic zone (b) Littoral zone (c) Intertida zone
(d) Neritic zone (e) None of these

(xviii) Which one of the following RNAs is non-genetic and brings amino acids to the site of protein synthesis?
(a) m RNA (b) t RNA (c) hn RNA
(d) pre-r RNA (e) None of these

(xix) Transfer of material , from higher concentration to lower concentration across semipermeable membrane is called:
(a) Mass flow (b) Osmosis (c) Ascent of Sap
(d) Diffusion (e) None of these

(xx) Optimum phosphorus uptake by roots takes place at:
(a) Neutral pH (b) Acidic pH (c) Alkaline pH
(d) All of these (e) None of these

PART – II

NOTE:	**(i)** **PART-II** is to be attempted on the separate **Answer Book.** **(ii)** Attempt **ONLY FOUR** questions from **PART-II**. All questions carry **EQUAL** marks. **(iii)** Extra attempt of any question or any part of the attempted question will not be considered.

Q.2. (a) What is photophosphorylation? Describe the cyclic and non-cyclic photophosphorylation. **(10)**
(b) Enlist the essential plant mineral elements. Discuss the uptake of phosphorous and its role in plant metabolism. **(10)**

Q.3. (a) Write note on: **(10)**
(i) Photoperiodism (ii) Vernalization
(b) What are enzymes? Discuss the chemical nature and mechanism of enzyme action. **(10)**

Q.4. (a) Write an essay on the role of climatic and edaphic factors on plant growth. **(10)**
(b) Discuss the problem of water logging and salinity. Also suggest important methods for the reclamation of water logged and saline soils. **(10)**

Q.5. (a) Describe the ultrastructure of chloroplasts. **(10)**
(b) Write notes on: **(10)**
(i) Biochemical nature of hereditary material (ii) Sex linked genes.

Q.6. (a) Discuss the role of water in plants. **(10)**
(b) Explain the concepts and productivity of ecosystems. **(10)**

Q.7. Write notes on the following. **(20)**
(i) Auxins (ii) Osmosis (iii) Transduction (iv) Significance of meiosis

Q.8. Describe in details the different theories of evolution. Also discuss the merits and demerits of these theories. **(20)**

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